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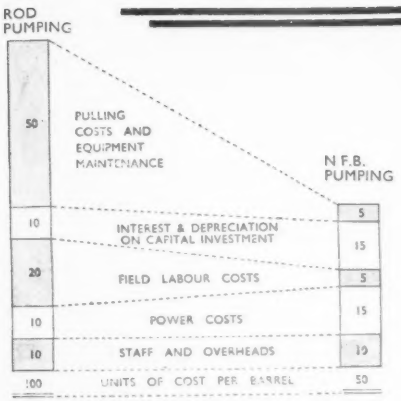

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MARKETING OF GASOLINE IN THE UNITED STATES AND THE UNITED KINGDOM

A COMPARISON OF METHODS

By G. P. GLASS

THE Petroleum Board in the U.K. was dissolved at the end of June, 1948, and although at the request of the Government, individual brands will not appear for at least six months, the oil companies are naturally looking forward to the time when they can offer competitive brands. Those engaged in the marketing of gasoline are preparing their plans for the future, and it is to be expected that the pre-war marketing structure in the U.K. will emerge more or less unchanged. The purpose of this article is to examine and compare the methods of marketing gasoline which have developed in the United States and the United Kingdom respectively, and the argument assumes that the differences in method which obtain are related to substantial differences in the extent and contrasting features of the respective markets.

An outstanding market difference lies in the size of the markets being served. The U.S. presents a market which is very much larger, in every sense, than that of the U.K. It is much larger geographically—the U.S. population is three times the U.K. population, and is more motor-vehicle-conscious in regard to the possession and use of motor cars. Recent estimates indicate that four in every hundred persons in the U.K. possess a licensed motor car, whereas in

the U.S. the ratio is as high as twenty. This ownership and use of motor cars is reflected and magnified in the gasoline consumption figures for the two countries. In 1947, overall U.S. gasoline consumption (including commercial consumption) was running at the rate of some 110 million tons per annum, while U.K. consumption (again including commercial) was just over 4½ million tons — without rationing it would probably have exceeded 5 million tons. Moreover, in the U.K. the average throughout per pump was considerably less than that in the U.S.

This difference in market conditions has induced the development in the U.S. of marketing methods capable of dealing with a large volume of trade. The consequent large turnover enables many distributors to carry higher overhead costs, and indeed, encourages direct distribution by the companies themselves, although there is also an extensive and growing use of the jobber/dealer method of distribution. This is a method peculiar to the United States. The jobber is a wholesaler who acts as an intermediary, working on an approved margin, between his supplying company (to whom he is linked by contract) and the dealer—the service station operator—although the jobber, in some instances, operates his own service station. No such arrangement exists in the United Kingdom, where the distributing companies, large and small, generally deal direct with garages and commercial consumers.

It may well be asked why the service station technique arose in the first instance in the United States and, conversely, why the concomitant development in the United Kingdom took the form of retailing through the garage. There are many reasons for the divergence of market techniques in this respect, some of which are historical. In the U.S., the growth in the use of the motor car was much more rapid than in the U.K., and, as the U.S. had an abundant, or even excessive, supply of gasoline, the emphasis was laid on efficient and forceful distributive methods as a means of promoting demand. Repair, maintenance, the supply of accessories and personal services—the "below the line" items—were subsequently superimposed on these distributive outlets, but the *raison d'être* of the service station continues to be the sale of gasoline, and the dealer lives mainly on his profit on gasoline. Moreover, there has always been a greater tendency to embark on new ventures which would take advantage of the demand for "service" facilities of many kinds—a tendency which has been strengthened by a regular influx of immigrants seeking commercial opportunities requiring comparatively little capital. The Englishman, on the other hand, tends to regard many of these "service" facilities as unnecessary frills.

Again, in the U.S., which is approximately thirty times the size of the U.K., road journeys can be long and arduous, and in many cases pass through long tracts of sparsely inhabited country. This favoured the development of the service station catering not only for the gasoline needs of the consumer but also for his requirements of accessories—tyres, batteries, and the like—and to provide him with rest and other facilities which help to make long journeys agreeable. Road journeys in the United Kingdom, however, can seldom be long and are never really arduous, and the need has not arisen for the servicing facilities which are now so prevalent in the United States.

Influenced to a large extent by the existence of an indigenous petroleum industry which produces an abundant supply of gasoline, and by the intense competitive atmosphere created by commercial radio broadcasts and other forms of sales advertising, the service station and its products, therefore, have become important elements in the American economy. The service station

operator is compelled to do his utmost to attract custom to his particular brand of gasoline, not so much by the inherent qualities of the product itself, but more by actively promoting sales and by installing the most efficient and modern servicing equipment available. Advised in many cases by his "parent" distributing company, the operator has developed a positive technique of seeking business. Each customer for gasoline is regarded as a potential buyer of such car accessories as tyres, batteries, plugs, etc. The operator knows that, on the average, for so many gallons of gasoline he should also sell so many tyres, batteries, plugs, etc. Thus, he has developed a standard technique of checking a customer's car whilst it is being "filled up" in the hope and indeed, in most cases, in the certainty of securing sales of other, and sometimes more lucrative, commodities. In some instances, sales promotion is even extended to non-motoring products, such as refrigerators and radios. An indication of the kind of services rendered by the average service station operator, and their importance in relation to the station as a whole, is indicated by the following table:

Sales of		*Percentage of Value of Total Sales*
Gasoline		75·0
Oils, greases		7·0
Fuel oil, kerosine	"Below the line" items	1·5
Tyres, batteries, etc.		9·5
Lubrication, washing, and other services		5·0
Other commodities		2·0
		100·0

Moreover, the service station in some instances has been extended to include facilities for servicing water craft and aircraft.

While there were a few service stations in the United Kingdom before the war, the normal garage operator does not lay himself out to service his customer's car in the same way as the American service station operator. Generally speaking, he does not promote sales but rather waits for them to come along. This basic difference in market technique may be attributed to the fact that the American is much more "service conscious" than the Englishman. The idea of servicing products in the hands of consumers is one which, while it exists in a few isolated cases in the United Kingdom, pervades the whole of the American economy.

In the U.K. the garage often had its origins in cycle repair shops which were already in existence in many parts of the country. For convenience, the distributing companies in general used these repair shops as distributive outlets, but the distribution of gasoline was regarded by the average cycle repairer as a secondary activity. This attitude appears to have persisted even when garages (i.e. vehicle storing and repair depots) were established. The retailing of gasoline is all too often regarded as a sideline and even now, in many parts of the country, skilled repair mechanics often have to lay down their tools to serve a customer with gasoline.

Finally, the fact that there are marked differences in the structure of the oil industry in the two countries and that gasoline is produced in large quantities within the United States has caused American market technique to develop along lines which are not evident in the United Kingdom. It is usual for oil companies in the U.S. to be closely concerned in the ownership or operation of the service stations retailing their own brands. In the U.K. it has never been the custom of the oil companies to sponsor service station ownership. Their support lies mainly in the provision of pumps and other equipment on hire or on easy repayment terms, and generally encouraging the garage owner to push the sale of their brands. In particular,

the service station in the United States is generally based on the sale of one brand of gasoline whether the station is company-owned or operated under the jobber/dealer arrangements. In the United Kingdom, on the other hand, a garage has been known to have as many as eighteen differently branded pumps. Thus, competition in the United States is mainly secured by a multiplicity of single brand service stations, while in the United Kingdom competition is exercised through a multiplicity of pumps at each selling point.

In both direct company and jobber/dealer operations in the U.S., however, the importance of a growing value of sales is not allowed to distract attention from the necessity to maintain operating costs at the lowest possible level compatible with efficiency. While every opportunity is taken to install modern and efficient servicing equipment as soon as new types become available, economies in operating costs are effected or encouraged in every possible way—by inducing service station operators to accept larger volumes of gasoline for delivery, by making tank capacities as large as possible in the light of existing regulations, and the like. All personnel engaged in the distribution of products through modern service stations are imbued, to a greater or lesser degree, with a "cost consciousness" which leads to a high level of marketing efficiency. This policy is not designed simply for profit alone but to enable distributors to give consumers more for their money. In a highly competitive economy, when products are abundant, and, indeed, at all times, an efficient distribution is a great competitive advantage.

In this respect, marketing companies in the United Kingdom have sometimes been handicapped by regulations, necessary though many of these are for reasons of safety and for the avoidance of traffic congestion. For example, restrictions are placed on the erection of pumps in the City area of London, which make it necessary for the oil companies to continue the supply of gasoline in tins in this area. Restrictions of this nature sometimes limit the efforts of the distributors towards a substantial reduction of local operating costs. It is to be anticipated, however, that in spite of the fundamental and psychological marketing differences outlined above, future developments and emphasis in the United Kingdom will—after the suspension of competitive activity during the war years—continue to result in a quick and efficient service for the motorist as far as the limitations in equipment will allow.

TANK CALIBRATION

In the April 1948 issue of the *Journal of the Institute of Petroleum* was published a tentative standard method for the calibration of oil storage tanks. Comments on the method were invited, and it is now announced that the final date for receipt of such comments, which should be sent to the Technical Secretary of the Institute, is January 31, 1949.

MARINE DRILLING IN BORNEO

The construction on the Borneo coast of a township to house men who will be drilling for oil beneath the bed of the China Sea is foreshadowed by the recent departure from London Airport by B.O.A.C. of a number of key personnel of Messrs George Wimpey & Co. Ltd.

The town is being built for the British Malayan Petroleum Co. Ltd., and some 750 houses on an area of about 600 acres will be capable of accommodating about 1400 people. A 4000-ft. jetty is also to be erected, and in the construction of this, surplus Bailey bridges will be used.

THE DAWN OF PETROLEUM REFINING

AN HISTORICAL OUTLINE

By EDWIN M. BAILEY (Member)

NEAR the boundary of the counties of Derby and Nottingham there is an area containing coal and ironstone mines and pits which have been owned by the Oakes family for a century and a half. There is a date-stone in the wall of the office in the Riddings ironworks inscribed "1802", and it is from about that date that the minerals have been worked.

The coal is said to have been worked "since the time of Chaucer": there are "outcrops" and coal is found within a few feet of the surface.

It was at one of the Oakes mines that James Young, a chemist from Glasgow, carried out in 1848 the first refining of petroleum on a semi-commercial scale. The site is commonly referred to as Alfreton, but Riddings and Pye Bridge have also been mentioned. Careful investigation and consultation with friends in the locality have established that it was in the "New Deeps" mine at Riddings that James Oakes discovered natural petroleum oozing from a mineral seam. Both James Young and Lyon Playfair refer to the rock as "sandstone" but a miner who worked there states that he had never seen any sandstone.

The oil was mixed with brine and the mixture was brought to the surface in tubs. Attempts to recover the salt by evaporation proved uneconomic, and the material was discharged into the Cromford Canal at the Pye Bridge end of Riddings. Three cases of damage by the material are reported: a woman threw a dustpan of red-hot ashes into the canal and set the oil on fire; youths set it alight "for fun"; a quantity of porter at a local brewery was destroyed by the use of the contaminated canal water.

It is likely that these troubles caused Oakes to consult Playfair the chemist for, on December 3, 1847, the latter wrote to Young, who was then employed in a chemical works in Manchester. In this letter Playfair told of the oil-spring (termed "naphtha") and suggested that Young's employer or he himself might with profit produce from it valuable

James Young (centre) *with James Oakes* (left) *and Lyon Playfair* (right).

products. The firm did not think the quantity—about 300 gallons daily—worth their attention, so Young himself purchased the oil from Oakes. He erected a small refinery near the mine and proceeded to fractionate and refine the thick, almost black, petroleum into marketable products for illumination and lubrication. This refining continued from 1848 to 1850, when Young cancelled his seven-year agreement with Oakes and closed down his small refinery.

Thus, 100 years ago, the foundation of the mineral oil industry was laid.

It was not until 1854 that Evelett and Bissal of New York organized a company to develop the petroleum at Oil Creek, Pennsylvania, but no progress was made until August 1859, when Colonel C. L. Drake "struck oil" by boring, obtaining about 400 gallons per day. By that time James Young's refining methods were protected by patent in the U.S.A. and for fourteen years the refining of this petroleum was carried out by these methods and royalties paid on his patents.

Through the courtesy of Mr Arthur White a "Deed of Covenant in regard to a Spring of Fluid Bitumen at Riddings in the County of Derby", dated September 20, 1848, and signed, sealed, and delivered by James Oakes, Thomas Haden Oakes and James Young, in the presence of Edward Meldrum, Riddings, has been examined. It is a lengthy document and the main features are:

Oakes to erect at their own expense on their land, buildings or works to refine all fluid bitumen from any Oakes coal mine, and to deliver the oil at these works in casks, tanks, or cisterns, for a period of seven years; Oakes to supply at their own expense apparatus, utensils, vessels, tanks, implements, and tools necessary "to set on foot the concern"; land (not exceeding 30 perches) near the works with "free liberty of ingress, egress, and regress for Young, his agents, workmen, horses, carts, and carriages"; Young to his best skill and judgement (as a chemist) to manufacture from the fluid bitumen any useful and saleable article and to devote necessary time and attention; Young to pay for coal, wages, damages, and losses, and to pay Oakes ten per cent per annum on the sum expended in erecting the works and on implements, etc.; the naphtha and every article manufactured to belong to Oakes (five eighths) and Young (three-eighths) and Young to retain as commission fifteen per cent of the sum received from the sale of products; disputes to be settled by arbitration.

It has been repeatedly stated that the spring at Riddings, or "Alfreton", gave out in a few years and as recently as November 14, 1947, a letter in *The Derbyshire Times* said that "The Riddings spring was exhausted in 1851". This is contrary to fact. On March 13, 1865, Young said in a lecture: "The quantity of petroleum from the mine gradually diminished, and that petroleum work came to an end, but it had served a useful purpose; it had proved that petroleum could be turned to good account." The fact that Young closed his refinery at Riddings in 1850 may account for these erroneous statements that the flow of oil "ceased" then or shortly afterwards.

However, there is in existence a book labelled "An account of oil sold at New Deeps pit". This covers the period 1873 to 1877, and shows sales of oil up to about 30 tons per month, but Young's name is not among the purchasers.

Letters from James Young and James Oakes (for which the author is indebted to Miss Alice Thom, James Young's granddaughter) conclusively prove that up to 1859 at least Young was buying petroleum from Oakes and refining it with his oil produced from cannel coal by his low-temperature distillation process at his Bathgate works, West Lothian. Extracts from correspondence are:

Alfreton Iron Works, Derbyshire, March 26, 1859. We got advice of the casks being forwarded from Mr Meldrum, and on their arrival they shall be filled with petroleum and returned by way of Hull to Leith for Bathgate if the route meets your approval. . . . We

shall be quite content to take 2s. per gallon for the petroleum. As you say it will be the simplest way by far, as it ends the whole matter.—JAMES OAKES.

Bathgate, June 28, 1859. Dear Young, The petroleum is intimately mixed with a large quantity of water which from the thick nature of the petroleum does not separate, but on warming it the water sinks immediately.

Off the first six casks we have got 270 gallons of water, and I am now going on with the other six. . . . I think you should write Mr Oakes about this. This petroleum is much thicker than when I was in Derbyshire.

Murrayfield, May 14, 1855. The Derbyshire petroleum is of a dark brown colour nearly black as it comes out of the rock (a coal measure sandstone). Its sp.grav. is 0·900. When cooled to the freezing point of water it becomes very thick from the paraffin crystallizing. On distilling there first comes over a small quantity of very light naphtha (sic) sp.gr. 0·715, next a light oil of sp.gr. 0·778 containing no paraffin; this was used for burning in lamps; then came the oil containing the paraffin the gravity of which was 0·860. The first two products were colourless, the last was of reddish colour. (Unsigned, but in James Young's handwriting.)

Bathgate, November 23, 1858. Dear Young, I send you a book in which the petroleum used seems to have been regularly marked down . . . in all 13,824 gallons.

I send you a receipt from J. Oakes & Co. for £723 7s. 5d.—this is all the cash paid to him except rent. This gives 1s. 0½d. that Messrs Oakes & Co. got for each gallon. Yours truly, Ed. Meldrum.

Mr Walter Thompson, as a boy, helped his father to fill barrels of oil from the spring at Riddings, and it was in 1884 that he finished: the "Deeps" mine was closed in 1885.

Some of the ideas which Young had for his patent for obtaining oil from coal by distillation are cited below:

September 22, 1849. Took 12,000 measures of oil from Alfreton and added 3,000 grains measure of sulphuric acid. Cast iron still, vitriol and soda, boil with water to deodorize. Treat with vitriol and chalk in lead or cast iron cistern, settled in cast iron cistern, £40.

Worms and condensers, cast iron, £50. House, £100. Chimney, £15. Pumps, £20.

Riddings has 3 worms we must have 4.

(1850). *Suppose a screw retort to do 10 cwt per 24 hours; this is 20 galls a day or 120 galls a week.*

(1851). *Vitriol, 2 tons at £7. Wages, 6 men at 20s. Salary to Meldrum, £3.*

As the flow of petroleum was small and was diminishing, refining on that scale was likely to prove uneconomic. So James Young conceived the idea that the oil had originated from the coal by the action of subterranean heat and experimented on this. In his own words:

During the time my petroleum work was going on, I started an investigation with the prospect of procuring petroleum, or substance equivalent to it, from coal, and after some time succeeded. . . . The process consists in the distillation of coal at the lowest temperature at which it can be decomposed. By this process we obtain a mixture of several liquids with paraffin dissolved in them. This liquid I named paraffin oil.

His methods of refining and for the extraction and purification of the solid paraffin (wax) are described in his patent specification dated October 17, 1850.

The relations of Oakes and Young were very cordial. There are many kindly references in their correspondence, and invitations from James Oakes for Young or his partner to visit him and offers "a bed at any time".

In 1850 to 1851 James Young erected works at Bathgate, West Lothian, Scotland, and began the distillation of cannel coal (and later of oil shale) and the refining of the crude oil thus obtained. He and his partners, Meldrum and Binney, "at first manufactured naphtha and lubricating oil. Paraffin oil for burning and solid paraffin were not sold until 1856, and the demand for it only became considerable in 1859".

James Young's basic methods of refining were in use for natural petroleum throughout the world for many years.

In compiling this fragment of history,

* This refers to a former arrangement which involved payment of lease and price per gallon.

accuracy has been the first consideration and the author is indebted to many kind friends who have supplied much very interesting information, some of which it has not been possible to use on account of space limitations. They are: H. S. Sharpe, of *The Derbyshire Times*; Charles Handford (through E. G. Kington), Chesterfield; Walter Thompson, South Normanton; Arthur White, of James Oakes & Co., Riddings collieries; the Chief Librarian of Derby Public Library; J. P. Heathcote, Chesterfield; James Oakes, who furnished *A short history of Riddings*, by Thomas Haden Oakes.

LONDON BRANCH

A SMALL party from the London Branch of the Institute paid a visit to the De Havilland Works and airfield at Hatfield on October 7.

In the Fuel Combustion section of the Experimental and Tests Establishment, experiments seen included combustion characteristics of kerosine under varying conditions of temperature and pressure and the study of air flow round curves, using a cascade of vanes to reduce and prevent lateral movement (using one standard combustion chamber from a "Goblin" gas turbine engine).

In the course of erection was a mahogany model of a "Vampire" to be used in the study of loss of ram effect through the air ducts on the present machine; also a rig for research into the mixing of air streams of differing temperatures, using one combustion chamber exhausting hot gas into a normal tail cone with cold air introduced through an anular ring in the cone.

A high-pitched and deafening scream emanating from the next building heralded the approach to the "jet test beds". A "Goblin" engine, running at 10,000 r.p.m. and developing 3000 lb. thrust, was the source of the noise. After a brief period at the door of the chamber the party repaired smartly to the control room, which was pleasantly quiet by comparison. Here an impressive instrument board covered the whole of one wall, surrounding the observation window.

In the other test beds several more engines were being fitted up for test, including the "Goblin's" younger brother the "Ghost" (static thrust 5000 lb. at maximum r.p.m.).

The newly erected propeller testing tunnels were next inspected. These twin tunnels are intended to cover some fifteen years of development and are designed to take engines up to gas turbines of 10,000 s.h.p., and contra-rotating propellers up to 20 inches in diameter. Each tunnel has an impressive control room with an observation window fitted with armoured glass screen and non-reflecting curved windows.

Hydraulic lifts in the base of the tunnel facilitate easy servicing *in situ*, and a system of artificial cooling for both coolant and oil is available. For air-cooled engines provision is made for artificial draught.

On the production lines "Doves", "Vampires", "Sea Hornets", and "Mosquitoes" were seen in varying states of completion or modification, including the "Vampire" which, in December 1945, made the first jet landing on an aircraft carrier.

During an excellent tea the visitors' appreciation of the courtesy of the De Havilland Aircraft Company was offered to Mr Tudor Jones, and an interesting afternoon came to an end. *N. E. W.*

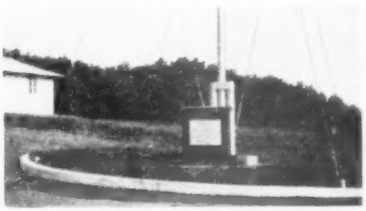
TO OVERSEAS MEMBERS

THE address of H. E. F. Pracy given on page 298 should be amended to read: H. E. F. Pracy, B.A., Trimpell Ltd., Heysham Refinery, Morecambe and Heysham, Lancs., England.

DALLEY VILLAGE
SANTA FLORA, TRINIDAD

DURING September the Dalley Village, named after Christopher Dalley, a former President of the Institute of Petroleum and former joint managing director of Trinidad Petroleum Development Co. Ltd., was formally opened by H. E. the Hon. P. M. Renison, Acting Governor of Trinidad.

Unveiling a memorial stone, Mr Renison said: "I think it is most fitting that the village should be named after Mr C. Dalley, who did so much for the company during his association with it and who first had the project of a village on this site under consideration. The present management ought to be highly congratulated on having implemented the project at so much financial cost for the benefit and welfare of their staff and workpeople."



The memorial stone, the inscription on which reads: "In memory of the late Christopher Dalley, for many years joint managing director of the company, whose courage and guidance was a source of inspiration to all with whom he was associated and to whom the company owe an everlasting debt of gratitude."

The new village is south of Santa Flora, and at present comprises thirty-four houses. Six of these are for the accommodation of the company's senior staff, four for junior staff, and twenty-four, each housing two families, for workmen. The buildings have all modern conveniences and with the complete layout of the area are estimated to have cost the company about $250,000.

A well-appointed health centre has also been established and there is provision for playing fields and other amenities. The area will be extended as occasion demands.

H. A. Bennett, general manager of T.P.D. Ltd., said that the company was offering work to about 1400, and he thought the Government should assist them in providing "suitable education for the sons of the men who work here". They had found that many boys leaving school had not, through no fault of the masters, reached a sufficiently high standard of education to take advantage of the company's apprenticeship scheme. It would be a good thing if, in this rural area, the Government could establish proper schools to offer technical education for these boys. The work of the industry was becoming more and more technical, and it was only when boys were properly educated that they could taste the fruits of their fathers' labours.

Semi-detached houses for workmen.

Staff houses.

BRITISH PLANT AND MATERIAL FOR THE OIL INDUSTRY

An Address by B. J. ELLIS (Fellow), *to the Oil Industries Club.*

IN dealing with this question of plant and materials, it should be borne in mind that materials for the oil industry as a whole have been my main preoccupation for nine years, and that the building up of a British petroleum equipment industry has been a project that I have fostered and worked for ever since my return from the East twenty-four years ago.

I think it might be helpful if we glance for a moment at the history of petroleum equipment manufacture in Britain. When I joined the oil industry in 1912, the Continent, which was a large producer of oil, was getting most of its equipment locally, and America and Canada were getting practically all their equipment locally; the Far East fields were drawing almost all their requirements from either America or the continent of Europe. But there were in Britain two firms—Perkins Macintosh, and the Deep Well Tool and Boring Company at St. Albans—producing plant both for the Galician fields and for those in the East.

After the 1914–18 war, Britain more than held her own for quite a long while, not only in manufacture to American designs, but in new thought and new designs. In fact, we led the Americans in double-bearing rotary tables, large-drum draw-works and all sorts of devices for drilling under pressure, diesel-electric plant for drilling, inclinometers, in the technique of mud control, and in many other ways. A great deal of refinery plant was built here also, and our reputation put us, if not the leader, at least on the same level as the most advanced designers of refinery equipment elsewhere in the world. Quite a lot of the refinery plant that was built here in those days, is I think, still in existence, and more would have been in existence if the Japs had not smashed it up.

Twenty years ago the oil industry was big, but not all that big, and there were a very large number of small firms and a few big ones in the U.S.A. and in Britain supplying its needs. Our output was small compared with the total world demands; but we were able to hold our own then all the way along the line.

Then, about 1926, came the development of the American Petroleum Institute, and the great technical get-together in the United States, when the A.P.I. standards were born and patents on refining processes were pooled. Incidentally, before that we had started on standardization and we were overrun by this technical development in America. We had to give it up on this side for the time being. There was some mental aberration on the part of the companies; for some reason they would not support standardization in those days, and everything went over to American standards. American manufacturers were also encouraged at that time to come to Britain and to take large financial interests and management interests in companies producing oilfield equipment here.

Then came the recent war and the shutting down of much oil development work abroad and a great reduction in the demand for oilfield equipment. But the armaments demand was such that all the dollars available had to be concentrated on that, and all oilfield equipment that could be obtained in Britain had to be obtained here.

In 1941 came Lease-Lend, and the whole demand was flung over to the United States; British manufacturers were left with plant half-finished and with a lot of stuff on their shelves. Finally, there was V.E. day and the return swing to the United Kingdom.

All these changes imposed a very great strain on the oil companies and manufacturers, and on that small body of men who were struggling with the problem in the Petroleum Division of the Ministry of Fuel and Power in those days; but even before the war was won we all approached the post-war period with great vigour and the determination to make a go of it.

That determination was shown in two ways. In the first place, the oil companies got down to post-war planning, and secondly, the manufacturers started the Council of British Manufacturers of Petroleum Equipment, both signalizing in their own way the appreciation of the necessity for some form of "combined ops".

The word "planning" in this year of grace 1948 is liable to raise ire in many people's minds; but up to a point it has to be. Those working in the East before the war had to plan their work at least six months ahead, because it took six months even in those free days from the time of forwarding an indent to the time when all the plant and material was available at site. If the plan was of such a nature that the headquarters office in London had to be consulted, the time was longer by days or months. Nowadays, in addition to all that, we have this tremendous complication of control and shortages of materials, manufacturing capacity, and man-power, and we have reached the stage now at which the oil industry has to plan sufficiently far ahead to enable others to plan the provision of the supplies required. We have these two interests planning one behind the other; so that we have to look forward eighteen months or two years and, indeed, we have to think forward three or four or even more years.

But I suggest that all this is still essential. It falls under the first part of that French expression, "L'homme propose, le Dieu dispose". What you might legitimately complain about would be if *l'homme* attempted to usurp the function of *le Dieu*; and it may be that certain of the troubles with which the two sides of the industry are faced are not unrelated to something of that sort.

Coming back to post-war planning, the first attempt produced figures of demand which were absolutely astonishing to all of us; and I think the oil industry was as much surprised as anybody else. During the war we in the Petroleum Division had accumulated a vast amount of knowledge about the demands of the oil industry, for the Americans had required us to give every need in the greatest detail. My staff, led by Dr Barber, were thus able to break down the money figures into fourteen major categories and ninety-six sub-categories of plant, materials, and equipment. The whole plan, when suitably adjusted to a gradual rate of change, formed the basis of all negotiations with other departments and in many cases gave the equipment industry the basic data for their forward plans.

That planning by the oil companies and my staff's interpretation of it was a most valuable piece of work; it put the oil industry into the Government's post-war picture, material and dollar wise, and I feel that without it we should have floundered about for a very long while. We had to do quite a bit of adjusting, because the oil industry's plan as presented to us in 1944 showed a rise in demand during 1945 in a straight line from an expenditure of about £40 millions to about £70 millions; that was felt to be beyond the capacity of the manufacturing industry. The plan as finally adjusted showed the expenditure of £25 millions at the beginning of

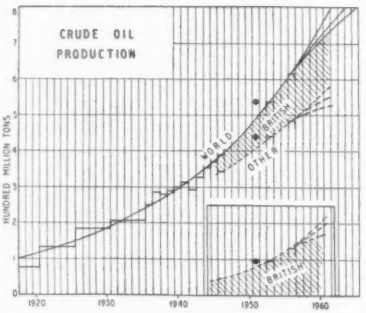
1943 in sterling and dollars, rising to £60 millions somewhere in 1947. The plan assumed that materials would be required three months after the order was placed and that delivery would take place nine months later. The plan is now out of date, for there has been a tremendous rise in prices, but based on 1944 prices the plan has proved to be surprisingly accurate. The expenditure was divided up into the fourteen categories of plant, materials, etc., showing what was required in each class.

The world oil consumption curve is of great interest to those dealing with materials. Looking only at history for the moment, you will see that oil consumption has continuously increased in a geometrical progression between 1918 and 1947.

So much for the past; now for the present and the future. Let us consider the data we have to work on. All sorts of people produce estimates of future world oil production and consumption, and many of the estimates are published. You can help yourselves to all this information. You can look at the number of motor cars, oil-fired ships, agricultural tractors, and other fuel-consuming apparatus being made here, in America, and in many other countries: you can listen to the oil experts' views, that they will welcome the advent of atomic energy because they feel certain that the demand for fuel and power will be so enormous that the oil industry and the coal industry will just not be able to handle it. You can look in all directions, but you cannot find any suggestion anywhere that the demand will not go on and on.

It would not require a great deal of research for you to find out that the scale of British oil companies' operations recently has been in the neighbourhood of some 50 million tons a year. You know from Parliamentary debates that £95 millions have to be spent on refineries in this country; and you will, no doubt, have seen from the Paris reports on economic co-operation that demands in Europe rise by some 35 million tons over the next few years. You will know from other sources that America has ceased to be an exporter of oil and has actually become an importer; and finally you will know that British oil interests have a very large share of the oil resources available outside the United States.

I have tried to combine all that information on the chart. What does it mean? It means, first, that the British oil industry has to expand enormously in the very shortest possible time; and it is likely in future that British resources



will have to take care of more than the proportionate amount of the annual rise in world demand. You have the figure of £95 millions to be spent on equipment of refineries in this country —say, 15 million tons per annum capacity—and the 35 million tons increase in European demand; those figures give an idea of the expansion in the future. The increase urgently required to be met may be something like 50 million tons per annum.

Secondly, an enormous demand for petroleum plant, materials, and equipment is likely, with short-term fluctuations, to continue as long in the future as manufacturing industry can think of or plan for.

Thirdly, the size of the demand is colossal. At present the British oil

industry is placing orders for plant, materials, equipment, supplies and services at the rate of about £90 million per annum in this country and on the Continent and in the United States. Present expenditure covers some of the expansion programme, but it hardly touches the obsolescence problem with which the industry will be faced in the near future.

Let us consider the obsolescence problem for a minute. There is in existence now some 50 million tons per annum of refinery capacity, a large proportion of which was in existence pre-war, and is now ten years old or more. The life of refinery plant is usually not more than fifteen years, or twenty years at the very outside, so that you have 50 million tons per annum of capacity to be replaced in the not too distant future. The cost of refinery plant is in the neighbourhood of £3 10*s*. per ton per annum of capacity; so that something like £35 million has to be spent in replacing plant in the near future, in addition to the expansion programme. There is also the oilfield, oil transport, distribution and marketing obsolescence.

If we add all these things together it will not be surprising to see the oil industry in the not very distant future spending £120 million a year on plant, materials, etc, and using something like one million tons of steel from all sources. How that vast expenditure will be split I do not know, as between refineries, oilfields, and so on; it can be worked out, but it is much too big a subject for a talk such as this. In every direction, however, there is enormous scope for British manufacturers and engineers if they will grasp the opportunity.

You can work out the size of the problem in another way. If we take the previous capacity of the British industry at 50 million tons, and add another 50 million tons, we arrive at 100 million tons of oil, worth £5 or £6 per ton, representing £500 to £600 millions per annum. The value of the materials going into the production of oil is probably 20 to 25 per cent of the value of the oil produced; that would represent £100 to £120 millions per annum.

The problem is so big, I suggest, that it can only be tackled by big manufacturing and engineering units. The small manufacturers will still be required, of course, but large units will be necessary because the costs of research and development will be so large that small units just could not deal with it.

You will, I am sure, wish me to say something about steel. I am not permitted to give you any figures of actual allocations, but I think that by and large you will get just about what you want. You may say that it is wishful thinking; maybe, but possibly there is a little more behind it than that.

Anyway, my advice to manufacturers is that they take their courage in both hands and go out after it. Let them focus their eyes on the future demands of the oil industry and believe that the steel will come along; there will be no falling off in the demands for oil. Nobody has yet produced the atomic energy pill, and the magic carpet is not here; until those things come along, the oil demand will be such that, if oil runs short, it will be produced from coal.

Manufacturers and suppliers should remember that the production, refining, and distribution of every ton of oil requires the supply of a definite fraction of a ton each of plant material, equipment, and stores; so that the more oil there is produced each year in the world, the more of these things are wanted, no matter whether British oil companies or somebody else produces the oil.

Finally, I would like to make two pleas. One is that the oil industry and the manufacturing and engineering industries should carry on with the planning, and should not leave it to governments to add up all the bits and pieces of individual companies' plans. If the companies do not plan, the

Government is forced to do it, and the addition of all the bits and pieces, although done with the very best will in the world, is bound to give an incomplete picture and very probably a distorted one. The big drop you will notice in the curve of steel allocations is very largely due, I think, to the lack of a far-seeing plan covering the oil industry.

To the manufacturers and engineers I would say that they should put themselves in the position of knowing as much about the oil industry and its plans as the oil industry knows about itself, for without that knowledge they cannot serve the oil industry properly. They should have, I suggest, an intelligence service, which does not merely circulate extracts from the Press, but which collects all the information it can obtain on the oil industry and the forward oil demands, and analyses and synthesizes those things into forward demands for plant and materials. The manufacturing industry just cannot serve the oil industry unless it knows where it is going; and it cannot expect to do that merely by asking the oil industry to say where it is going. It must find out and take its chance on the information it obtains.

STANLOW BRANCH

AFTER having enjoyed a most instructive works visit as a curtain-raiser to the session's activities (see p. 347) the Stanlow Branch of the Institute was fortunate enough to have, as its first speaker of the 1948–49 programme, the President of the Institute, who gave a lecture entitled "Higher Hydrocarbons in Service".

About fifty-five members were present at Thornton Research Centre on October 20 to hear E. A. Evans discuss, in the most stimulating and interesting manner, the progress of lubrication from the days of fatty oils to the present, when few lubricants are considered really fashionable unless they incorporate some of the more complex results of the skill of the organic chemist.

Despite, however, the important part played by scientific research in the formulation of better oils and in giving us a more thorough understanding of the basis of lubrication, the lecturer stressed that the whole subject must be considered, in its entirety, as being to a considerable extent an "art", in which experience and "know-how" are equally important partners with knowledge of a more academic character.

As might be expected at a meeting where most of those present are actively concerned in either the production or testing of lubricants, the discussion after the refreshment interval was a lively one, and the lecturer's handling of the problems put to him was not the least instructive feature of the evening. The meeting concluded with a vote of thanks to the President, proposed by J. S. Parker.

A meeting, additional to those announced in the Stanlow Branch programme for 1948–49, was held at Thornton Research Centre on November 2, when K. B. Ross read his paper on "Integration of Operations in a Large Refinery" which he and Mr McKinlay had presented to the parent institute in London on October 14.

. Approximately seventy members were present, including a party of about twenty who had made the trip from Heysham, which, although at some distance from Stanlow, is within the Branch area.

As was the case at the London meeting, Mr Ross's paper gave rise to a very lively, interesting, and prolonged discussion, and the meeting had finally to be terminated owing to the lateness of the hour.

A vote of thanks was moved by H. E. F. Pracy and enthusiastically carried.

COUNCIL COMMENTARY

THIS commentary will cover the three meetings of Council held in September, October, and November, 1948. What a wealth of material accumulates in three months!

Dealing first with domestic changes, we are happy to report that by unanimous vote of Council, the president Mr E. A. Evans, has been re-elected and has agreed to serve for a further year. The vice-presidents, who come up for review annually, all retiring and two being ineligible for re-election for the following year, were decided byCouncil ballot as follows, for the session 1948–49: Messrs M. A. L. Banks, E. J. Dunstan, E. B. Evans, H. Hyams, J. S. Parker and C. A. P. Southwell.

We have also to record the appointment of a new general secretary, Mr D. A. Hough (pronounced Huff) and an editor in our old friend, Mr George Sell. Council extend a warm welcome to both in their new appointments.

Messrs G. H. Coxon and C. Chilvers, having received well-merited thanks from Council, are to continue in their offices of honorary treasurer and honorary secretary respectively, for the ensuing year. Various other committee appointments, dealing with Publications and Standardization committees, were also dealt with in this period, as also were appointments to representation on outside bodies, as follows:

The President has agreed to be the vice-president of the Empire Mining and Metallurgical Congress, with T. Dewhurst and C. A. P. Southwell as delegates. The President is also to be Institute representative on the Oil Consumers' Council.

The question of our home for the immediate future, after threatening to go off at a tangent, has now been settled, and the lease signed for more extensive occupation of our present premises; our energetic new secretary has lost no time in putting forward proposals for rearrangements made possible by this extension.

Council is to be ejected from the library room, which will be, on this account, more effective as a library and reading room for the use of members, alternative accommodation for Council meetings and Committee meetings being found in No. 2 Committee Room, which is to be refurnished and provided with adequate lighting. Schemes are under consideration and may lead to the possession of a private canteen, which will undoubtedly be a very welcome boon to the resident staff, and not without its attractions for committee members who may now be able to get light refreshment as needed, on the premises.

Membership figures continue to show gratifying increases, particularly among the new class of Member Companies, imposing lists of whom have been presented to Council and will, in due course, be made public.

The allocation of new candidates to the various grades still engages the earnest attention of the By-laws and Election committees, who have already had joint meetings, in addition to recently instituted cross-representation on each other's committees.

The correct placing of candidates is a matter of considerable importance to the Institute, as these placings will, in the long run, determine the character and work of that part of the present Institute which inherits and desires to carry on the traditions and standing of the old Institution of Petroleum Technologists, as far as that aspect of the wider general character of the new Institute can be carried on.

A decision to make allowance for the abnormal conditions of the last ten years by readmitting members who have fallen into arrears, will, it is hoped, encourage all who should be within the Institute to rejoin.

The Finance Committee, faced with

difficulties about prompt audit, tabled the 1947 accounts for presentation to the adjourned annual general meeting and these were duly passed, on October 14.

The Public Relations Committee has carried on the good work dealing with the provision of a crest and monogram for the Institute and has received Council approval for an attractive and distinctive design of monogram; also approval in principle, for the use of an archæopteryx as a foundation for a crest. This bird, known from fossil remains in oil-bearing geological formations in Europe, should at least be secure from the obsolescence which so soon overtakes designs based on drilling rigs or even aeroplanes.

A special sub-committee has made a preliminary report of its findings in an attempt to obtain a reasonably clear allocation of expenditure in connexion with various publications, and it is possible to say, even at this stage, that publications, as such, are at least self-supporting. This is pleasing in view of the extreme value of such publications, especially to the many members who are unable to attend meetings in London.

The President reported the success of the Joint Conference with the Institute of Fuel at Birmingham, at which papers of a very high standard were presented.

Council are very pleased to learn of the appointment of Professor Nisbet to be honorary recorder of the Scottish Branch.

Scholarships were approved to Peter Walter Taylor of the Royal School of Mines, and Denis Hammerton of the University of Birmingham.

It was reported that Colonel Pineau was in contact with our Dutch friends with a view to the holding of the next World Petroleum Congress in Holland in 1951, it being recommended that America should be strongly represented on the World Petroleum Congress Committee.

Dr F. Morton presented a report from the Research committee asking for guidance and Council decision in respect of the hydrocarbon research programme. A sum of £50,000 was mentioned as necessary to carry out a full programme as proposed, it being decided, in view of the present financial position to approach this situation gradually, and certain partial measures were approved accordingly.

It was reported that the reception given to international geologists on August 30 had been much appreciated. The President thanked all who had helped to make it a success.

The President reported briefly on his most successful visit to Paris to read a paper to the Association Française des Techniciens du Pétrole.

Standardization Committee report a successful luncheon given in honour of Dr Tuemmler, followed by a meeting and a very interesting talk by Dr Morton on the programme of the Research Committee.

A gift of £87 from Dr Egloff was thankfully received and allocated to Benevolent Fund. It was decided to nominate members to various B.S.I. committees and to review the situation in twelve months' time.

PERSONAL NOTE

E. J. Boorman, F.Inst.Pet., has recently been appointed chief chemist of the Anglo-American Oil Co. Ltd. Having carried out several years' post-graduate research at the Imperial College of Science and Technology, he became a member of the Department of the Government Chemist, where he was concerned with analytical, fiscal, and legal aspects of petroleum products. Soon after the end of the war, he joined the staff of Esso Development Co. Ltd. From his post as head of a research group there he was transferred to his present position with the Anglo-American Oil Co. Ltd.

SCOTTISH BRANCH

THE opening meeting for the Session 1948–49 of the Scottish Branch of the Institute of Petroleum was held in the Heriot Watt College, Edinburgh, on Friday, November 29.

At the outset Mr Robert Crichton, who was in the Chair, referred to the great loss which the Branch had sustained by the death of the Honorary Secretary, Mr Robert Guy. Speaking of Mr Guy, Mr Crichton said:

There is a very real sadness in connexion with this evening. Mr Guy, who was never absent from our meetings, has passed to his rest. You all know that four months ago we were shocked to hear of his sudden death.

A few days previously, the Branches Committees of the Institute of Petroleum met at Middleton Hall and visited the Scottish Oil Company's operations; then on the Friday we had a night of enjoyment, and on the Saturday the motor drive was appreciated by all who were present. I have no doubt you will remember that Mr Guy was, as usual, the life of the party. He was responsible for all the arrangements, and there was not one hitch. On the following Wednesday he passed away.

Mr Guy was known to many of us for nearly thirty years and he was a grand colleague.

He had a long connexion with the Institute of Chemistry. He became a Fellow of the Institute of Petroleum nine years ago, and was an enthusiastic supporter of the Scottish Branch from the time of its formation. First of all he was Assistant Secretary, and latterly Secretary.

Mr Guy represented the Branch on the Council of the Institute, and took a keen interest in all the meetings, particularly as a member of the Branches Committee.

As Chairman of the Scottish Branch, I appreciate all the work which Mr Guy so ungrudgingly carried out, and I would like to assure you that he made my job very easy indeed.

Mr Guy had a real kindly nature, and I never heard him grouse.

I move very sincerely that we record in our minutes our high appreciation of Mr Guy's work in connexion with the Scottish Branch, our sincere regret at his sudden passing, and our sympathy with Mrs Guy, her son Willie, and his young wife.

The members of the section then stood for a few moments in silent tribute to the memory of Robert Guy.

Mr Crichton then welcomed the new Hon. Secretary, Mr A. Fleming and the new Hon. Recorder, Professor H. B. Nisbet. One Associate Fellow and seven new branch members were also welcomed.

The main business of the meeting was to hear a lecture on "Development of Engineering Equipment for the Distribution of Petroleum Products", by R. E. Adlington, deputy engineer-in-charge, Main Production Division, Anglo-Iranian Oil Co. Ltd., who was introduced by Mr Crichton.

At the conclusion of the meeting, on the motion of Dr G. H. Smith, Mr Adlington was accorded a very cordial vote of thanks for his most interesting address. Professor Nisbet proposed a vote of thanks to Mr Crichton for his services in the chair, and this was received with acclamation.

The attendance at the meeting was over eighty.

INSTITUTE OF PETROLEUM DINNER

THE Institute is holding a dinner at the Savoy Hotel, London, on Tuesday, March 1, 1949.

The Right Hon Hugh Gaitskell, Minister of Fuel & Power, will propose the toast of the "Institute of Petroleum", to which the President will reply.

Sir John Anderson, G.C.B., G.C.I.E., LL.D., will propose the toast of the "Petroleum Industry", and the reply will be made by Sir Andrew Agnew, C.B.E.

Full details will be issued to all members shortly.

U.K. PETROLEUM PRODUCTION AND REFINING

SUMMARIZED statistics of the U.K. petroleum industry during the years 1938 to 1947 are given in the *Ministry of Fuel and Power Statistical Digest* 1946 *and* 1947* which has just been published. Figures for the years 1945 to 1947 in comparison with 1938 have been extracted therefrom and are given below.

INDIGENOUS PRODUCTS.

The two sources of crude petroleum in the U.K. are the natural petroleum produced in Nottinghamshire and the crude oil and crude naphtha obtained from the distillation of oil shale in Scotland. Production figures and details of the output of refined products obtained are given in Table I.

TABLE I. U.K. PRODUCTION OF INDIGENOUS PETROLEUM AND SHALE OIL

	1938	1946	1947
Production:	Million gallons		
Crude petroleum	—	14·4	12·2
Crude oil and crude naphtha from shale	32·9	29·3	25·5
Principal Refined Products:			
Motor spirit:			
From crude petroleum	—	3·1	3·1
From shale	6·1	4·8	3·7
White spirit and industrial spirit	0·8	1·8	1·8
Gas and diesel oils	16·3	19·5	18·6
Fuel oil †	5·3	7·1	5·5
Lubricating oils	—	2·4	1·8

† Including oil fuel used in refineries.

Production and value of oil shale are set out in Table II.

TABLE II. U.K. OIL SHALE PRODUCTION AND VALUE

	Production Tons	Value £
1938	1,551,346	563,688
1945	1,398,202	916,600
1946	1,316,533	812,235
1947	1,110,817	827,379

Refined motor spirit and other light oils are also obtained in the U.K. from coal and particulars are given in Table III.

TABLE III. U.K. PRODUCTION OF LIGHT OILS FROM COAL AND SHALE

	1938	1946	1947
	Million gallons		
*Refined motor spirit**			
'*a*' From coal, coal tar, etc.			
H.T. carbonization:			
at coke ovens	31·6	32·5	31·0
at gas works	10·5	7·1	2·7
Tar distilleries and benzole refineries	12·6	17·6	10·8
Total	54·7	57·2	44·5
L.T. carbonization	1·3	0·8	0·8
Hydrogenation	42·3	34·7	23·5
'*b*' From shale oil	6·1	4·8	3·7
Total refined motor spirit	104·4	97·5	72·5
Other refined light oils			
'*a*' From crude benzole and naphtha	13·9	23·0	22·2
'*b*' From shale oil	0·8	0·8	0·8
'*c*' From L.T. carbonization	—	0·1	0·1
Total other light oils	14·7	23·9	23·1
Grand total	119·1	121·4	95·6

* Including motor benzole.

IMPORTED OILS

Details of the quantities of products obtained in the U.K. from the refining of imported crude petroleum and process oils are given in Table IV.

The quantities of crude petroleum and process oils imported in the years under review were (in million gallons): 568 in 1938; 228 in 1945; 538 in 1946; and 619 in 1947.

TABLE IV. U.K. REFINING OF IMPORTED OILS

Products obtained	1938	1946	1947
	Million gallons		
Motor spirit	85·9	140·0	92·7
Industrial spirit	8·8	11·1	10·1
White spirit	16·2	7·8	8·8
Kerosine	26·3	10·6	28·5
Gas and diesel oils	152·7	104·1	95·3
Fuel oil*	105·4	134·3	187·1
Lubricating oil	36·3	75·7	84·2
Total	431·6	483·6	506·7
	Thousand tons		
Bitumen	605·0	458·7	433·1
Paraffin wax	5·6	1·3	5·7

* Including oil fuel used in refineries.

* Cmd. 7548. H.M.S.O. 3*s*. net.

CONSUMPTION

In Table V particulars are given of the quantities of petroleum products and substitute fuels released for home consumption.

TABLE V. U.K. CONSUMPTION OF PETROLEUM PRODUCTS AND SUBSTITUTE FUELS

	1938	1946	1947
	Million gallons		
Motor spirit			
Imported	1345·0	1184·4	1357·3
Indigenous*	104·4	99·4	75·0
Total	1449·4	1283·8	1432·3
Other spirit			
Imported	23·3	39·5	46·2
Indigenous	0·8	1·8	1·8
Total	24·1	41·3	48·0
Heavy oil for road fuel			
Imported	86·2	142·4	167·2
Indigenous	15·8	19·7	18·8
Total	102·0	162·1	186·0
Kerosine			
Imported	202·5	353·4	415·5
Indigenous	0·1	—	—
Total	202·6	353·4	415·5
Gas oil (excluding road fuel)			
Imported	66·5	286·4	383·0
Indigenous	0·6	0·7	0·6
Total	67·1	287·1	383·6
Fuel and diesel oil			
Imported	280·9	136·7	617·5
Indigenous†	5·3	74·1	25·1
Total	286·2	210·8	642·6
Lubricating oils			
Imported	104·7	118·5	152·3
Indigenous	—	2·4	1·8
Total	104·7	120·9	154·1
Bunker Fuel‡	313·2	402·3	461·6

* Including motor benzole.
† Including tar oils distributed by the Petroleum Board.
‡ For use of steamers, etc., in foreign trade and of fishing values.

In relation to the manufacture of gas, details of the fuels used are given, and the figures for gas oil, used in making carburetted water-gas, are given in Table VI.

The quantities of oil fuel used for generating electricity were as set out in Table VII.

TABLE VI. U.K. CONSUMPTION OF GAS OIL FOR GAS MAKING

Year	Quantity 1000 gal	Year	Quantity 1000 gal
1938	32,707	1943	50,390
1939	34,033	1944	93,277
1940	40,184	1945	105,895
1941	46,937	1946	132,449
1942	52,858	1947	171,765*

* Excluding 1,193,000 gallons of gas oil used for purposes other than gas making.

TABLE VII. U.K. OIL FUEL USED FOR GENERATING ELECTRICITY

Year	Quantity 1000 tons	Year	Quantity 1000 tons
1938	20	1943	14
1939	19	1944	18
1940	26	1945	20
1941	20	1946	34
1942	18	1947	67

PERSONAL NOTES

A. E. Sawdy, M.Inst.Pet., managing director of London & Thames Haven Oil Wharves Ltd. and a director of Cie Industrielle Maritime, of Le Havre, has been nominated a Chevalier of the Legion of Honour. This is in recognition of his work in the reconstruction of the oil installations at Le Havre and at Gennevilliers, Paris.

B. N. Darbyshire has joined the Moore & Charlton Group of Companies and has taken over management of the London Office of Harold Moore & Partners (Engineers) Ltd. and the representation of Moore & Charlton. Previously he was a petroleum economist in the Trade Relations Department of the Shell Petroleum Co. Ltd., in London.

L. W. Berry, O.B.E., A.M.Inst.Pet., assistant general manager of Anglo-Ecuadorian Oilfields Ltd., has been appointed to the board of the company in succession to the late H. C. R. Williamson.

W. M. V. Ash, M.Inst.Pet., former general manager of United British Oilfields of Trinidad Ltd., has been appointed president of Shell Oil Company of Canada.

FLUID SOLID TREATMENT OF OIL SHALE

THE first carload of a 1000-ton shipment of oil shale furnished by the U.S. Bureau of Mines from a deposit at Rifle, Colorado, has been delivered to the Esso Laboratories of the Standard Oil Development Co. at Baton Rouge.

This shale will be employed for experimental work, using the fluidized solids technique which has been successfully applied in catalytic cracking operations. The experiments, which will be on a large-scale basis, will be carried out in the original pilot plant in which the fluid catalyst cracking process was developed. The plant has been converted for the oil-from-shale project.

Oil shale, as it is mined, looks like dull grey slate. Before processing, the shale is pulverized. This material, like the catalyst used in catalytic cracking, behaves like a fluid as steam or gas is blown up through it. In this fluidized state, the shale particles are easily circulated.

Two vessels are used in the fluidized system of producing oil from shale. In one vessel the raw shale is heated to about 900° F. Molecules of oil dispersed throughout the shale are cracked and evolve as vapours. These vapours are distilled as shale oil from which gasoline, diesel fuel, lubricating oil, and fuel oil are obtained.

During the process, a portion of the spent shale is continuously withdrawn in an air stream to a second vessel. Here a small amount of excess carbon remaining on the shale is burned. This supplies the necessary heat for decomposing the shale in the first vessel.

Advantages of the fluidized solids process include intimate mixing, high rates of heat transfer between the hot and cold shale, and ease of transferring the shale between the two vessels.

The Standard Oil Development Company believes that considerable technical headway must be made before oil from shale can become economically competitive with crude oil. The present method shows marked progress, however, with many advantages to be gained from application of the fluidized solids technique.

FORTHCOMING MEETINGS

INSTITUTE MEETINGS

The Measurement of Kinetic Boundary Friction. F. T. Barwell and A. A. Milne. At 26 Portland Place, London, W.1, 5.30 p.m. (tea 5 p.m.), January 12.

Production from Condensate Reservoirs. L. C. Stevens and P. B. Boots. At 26 Portland Place, London, W.1, 5.30 p.m. (tea 5 p.m.), February 9.

Modern Trend in Tanker Construction. John Lamb. At 26 Portland Place, London, W.1, 5.30 p.m. (tea 5 p.m.), March 9.

LONDON BRANCH

Coal and Oil. J. L. Taylor. At 26 Portland Place, London, W.1, 6 p.m. (tea [1*s.*] 5.30 p.m.), January 25.

The Influence of Tetraethyl Lead on Engine Design and Performance. Air-Comdr. F. R. Banks. At 26 Portland Place, London, W.1, 6 p.m. (tea [1*s.*] 5.30 p.m.), February 22.

SCOTTISH BRANCH

Economic Background of Plant Protection and the Uses of Plant Protection. C. E. Foister. At North British Station Hotel, Edinburgh, 7.30 p.m., January 14.

MEETINGS OF OTHER SOCIETIES

Manufacture and Use of Carbon. H. K. Cameron. Society of Chemical Industry (London Sect.). At London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, 6.30 p.m., January 3.

Distribution of Gaseous Fuels. F. Bell. Institute of Fuel. At Engineers' Club, Manchester, 2 p.m., January 12.

Recent Developments in Medium Speed Two-cycle Oil Engines. C. B. M. Dale. Diesel Engine Users' Association. At Caxton Hall, London, S.W.1, 2.30 p.m. January 20.

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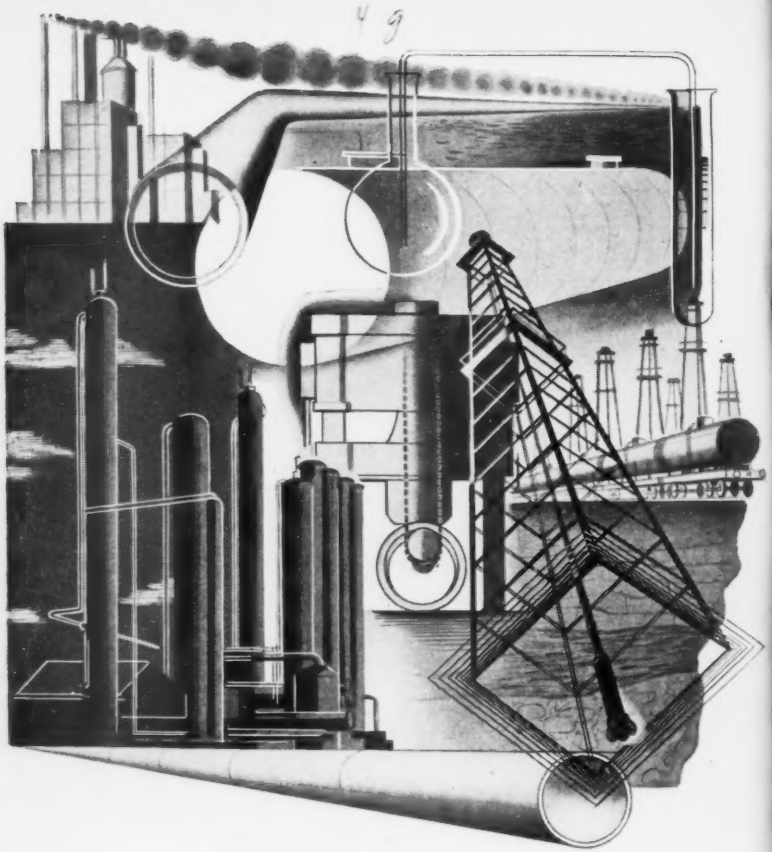

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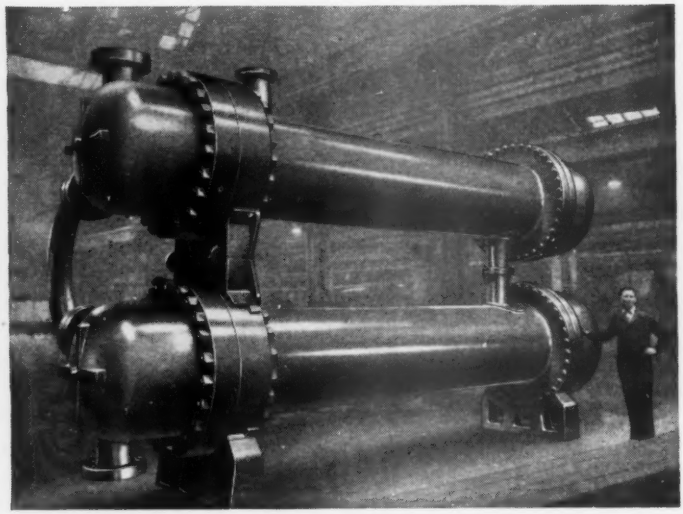

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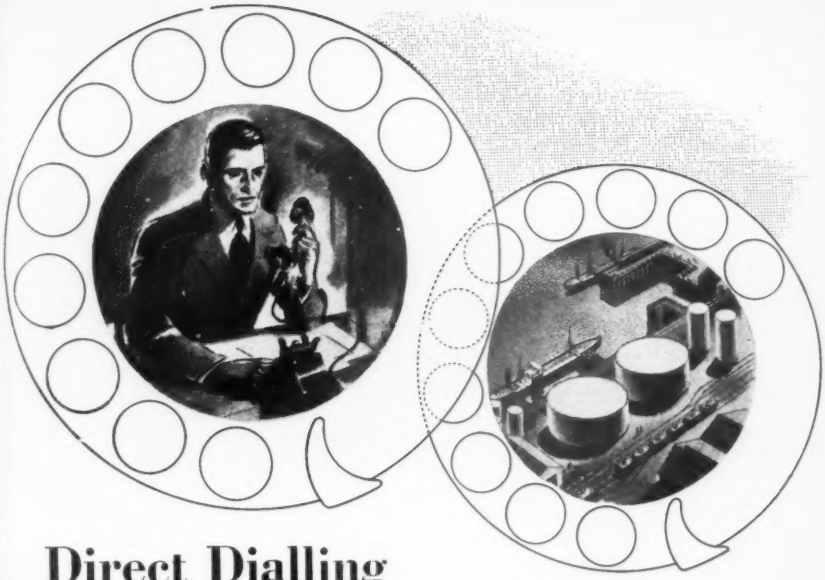

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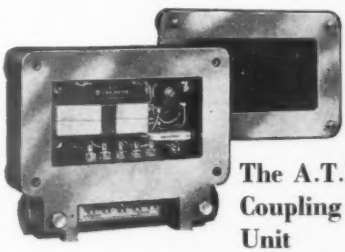

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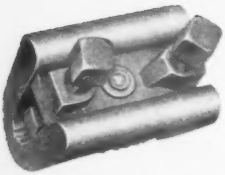

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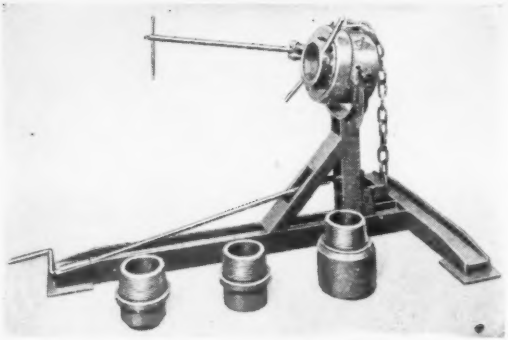

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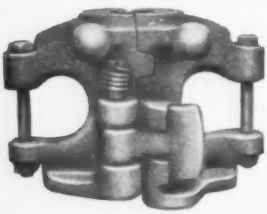

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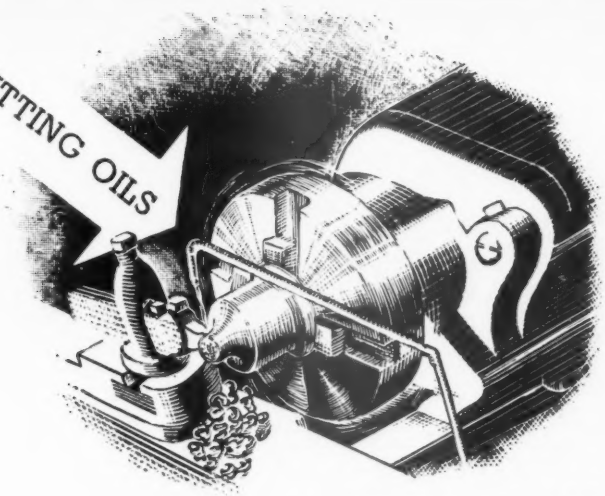

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